

\\ 185 \\

**Following the Tracks of Atkinson and Micklewright:
the Changing Distribution of Income and Earnings
in Poland from 1989 to 1995**

by

Gian Paolo Caselli
Maurizio Battini

Luglio 1997

Università degli Studi di Modena
Dipartimento di Economia Politica
Viale Berengario, 51
41100 Modena (Italia)
e – mail: caselli@unimo.it

**FOLLOWING THE TRACKS OF ATKINSON AND MICKLEWRIGHT :
THE CHANGING DISTRIBUTION OF INCOME AND EARNINGS
IN POLAND FROM 1989 TO 1995**

**BY
GIAN PAOLO CASELLI
AND
MAURIZIO BATTINI**

**DEPARTMENT OF POLITICAL ECONOMY
UNIVERSITY OF MODENA
1997**

FOLLOWING THE TRACKS OF ATKINSON AND MICKLEWRIGHT :
THE CHANGING DISTRIBUTION OF INCOME AND EARNINGS
IN POLAND FROM 1989 TO 1995

Introduction

The distribution of income in former planned economies has been widely studied by Lydall (68-78), Wiles (71), Pryor (73), Phelps Brown (88), Morrison (84), Redor (88) and lately by Atkinson and Mickelwright (92). All the authors, except Redor, broadly agree that the distribution of income was more egalitarian in communist economies than in the western ones. One of the main aims of the reform process is to establish a less egalitarian distribution of income very quickly; the magnitude of this economic necessity is daunting and as the last Economic Survey of Europe affirms: "*It seems likely that never before in peacetime human history has such a profound redistribution of measured income and wealth taken place, within such a short period of time*"

After the beginning of the reform process very few studies have appeared on the expected change in the distribution of income in the eastern countries. There is an empirical reason for this lack of studies; the time span elapsed from the beginning of the reform process is short, the statistical data are not completely reliable, owing to changed ways of collecting data, making it difficult to compare the pre-89 situation with the post-89 one¹. The greatest difficulty lies in comparing data referring to different economic systems which are radically changing over time.

Studies are beginning to appear: Frick, Topinska, Wagner, Mueller (97) on Poland and East Germany, Rutkowsky (96), Kudrycka and Radziukiewicz (92) on Poland, Vecernik (95) on Czech Republik, Kornelius and Weder (96) on Baltic countries, Doyle (96) on Russia and Milanovic (96) on various countries.

The aim of our paper is twofold. The first aim is to study the distribution of income and earnings in Poland from 1988 to 1995, following the tracks of Atkinson and Micklewright's book, applying the same methodology and the same data they use up to 1989; in a way this work seeks to be an extension of the work of Atkinson and Micklewright.

¹ A clear example comes from Poland, where the Polish Household Budget Survey underwent a radical change in 1993. The socio-economic groups passed from 4 to 6 categories, including the emerging private sector, but the publication has excluded income bands within each group, making it impossible to evaluate the quantitative distribution and, as a result, to continue the studies of Atkinson and Micklewright with the same framework of analysis after 1992.

All the works we have quoted above, except Milanovic, study the changing earnings or income distribution of the reforming countries taking the value of an inequality index (usually the Gini coefficient) for one year (Rutkowsky 1993, Topinska 1990, Kornelius 1994) and then comparing this value with a prereform one. On the contrary, we estimate the inequality indexes for every year after the beginning of the transformation in order to assess the dynamic pattern of the income or earnings distribution, trying to assess which are the winning or losing social categories in the reform proces.

The second aim is to assess, through the use of generalized Lorenz Curves, the gains or losses in terms of general economic welfare before and after the beginning of the reform period, giving a more vivid picture of the changing pattern of income and earnings distribution in Poland in this crucial time period.

General results

The distribution of income 1985 - 1992

In this paragraph we consider the behaviour of inequality indexes from 1985 to 1992. The indexes we take into account are the following: Gini coefficient, Robin Hood Index, coefficient of variation and the decile ratio.

TABLE 1 **INCOME INEQUALITY INDICATORS**

	P ₅	P ₁₀	P ₂₅	P ₇₅	P ₉₀	P ₉₅	P ₉₀ /P ₁₀	Gini	RHI	Var. Coeff.
1985	48,9	57,6	75	134,2	175,1	209,2	3,04	0,253	17,8	0,527
1988	49,7	59	75,8	133	174,8	207	2,96	0,246	17,4	0,502
1989	44,9	54,5	72,6	135,9	180,2	217	3,31	0,268	18,9	0,548
1990	46,02	55,17	73,71	133,49	176,05	209,11	3,19	0,258	18,17	0,523
1991	46,79	55,86	74,51	132,58	175,25	208,05	3,13	0,253	17,77	0,509
1992	45,86	55,07	73,36	135,02	176,91	211,69	3,21	0,26	18,28	0,52

Source: Budgety gospodarstw domowych, various years, GUS, Warsaw, author's aggregations and calculations based on paretian interpolation

From table 1 we see that the income distribution did not change very much, whichever index we consider; the Gini coefficient in 1985 was 25.3 and at the end of the period is 26.

There is a negligible increase which witnesses a substantial stability of the pattern of income distribution. The highest value of the index 26.8 in 1989 may be attributed to the price liberalization of agricultural goods, which increased peasants' incomes, changing the income distribution in their favour for that year. This temporary effect was cancelled by the subsequent effects of the measures of economic policies enacted by the first democratic government. The other indexes confirm the same pattern. The estimates made by Topinska and Wagner for the year 1989 show that the value of the Gini coefficient is very close to our estimate (26.07 against 26.8). The general indexes of income distribution do not show any beginning of an expected process of income dispersion. In our opinion this process could not be detected from data on income distribution, for the simple reason that the income originating in the non-agricultural private sector, which thrived in that period, was not collected.

Furthermore, we estimated inequality indexes, Gini coefficient and RHI for the four socio-economic groups whose family budgets are given by the GUS and which account for the whole Polish population (table 2).

TABLE 2 INCOME INEQUALITY INDICATORS

Anno	1975	1980	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Workers												
RHI	15,5	16,1	15,9	16,7	16,8	16,9	17	16,1	16,9	17,9	17,7	17,7
Gini	0,221	0,2275	0,2257	0,2375	0,2373	0,238	0,2391	0,2269	0,2393	0,2529	0,2498	0,2595
Mixed worker												
RHI	17	17,5	16,9	17,9	17,5	16,9	17	17,1	17,7	17,3	16,3	15,4
Gini	0,2396	0,2465	0,2384	0,2534	0,2484	0,2376	0,2407	0,2417	0,2487	0,2443	0,2302	0,2147
farmers												
RHI	22,1	22,7	25,3	25,6	24,7	24,5	24,4	24,3	25,7	23,6	21,2	20,6
Gini	0,3067	0,3188	0,3535	0,3566	0,345	0,3411	0,3381	0,336	0,356	0,3268	0,2955	0,2858
Pensioners and retired persons												
RHI	15,3	16,5	15,2	17	15,7	14,8	15,1	14,8	16,1	14,8	16,3	17,4
Gini	0,2169	0,2334	0,2176	0,2447	0,2258	0,2138	0,2185	0,2162	0,2297	0,215	0,2349	0,2491

Source: *Budżety gospodarstw domowych and Warunki życia ludności, various years, GUS, Warsaw, author's aggregations and calculations based on paretian interpolation*

The results are interesting because they show a quite substantial movement of the income distribution within every socio-economic group from 1989 onwards.

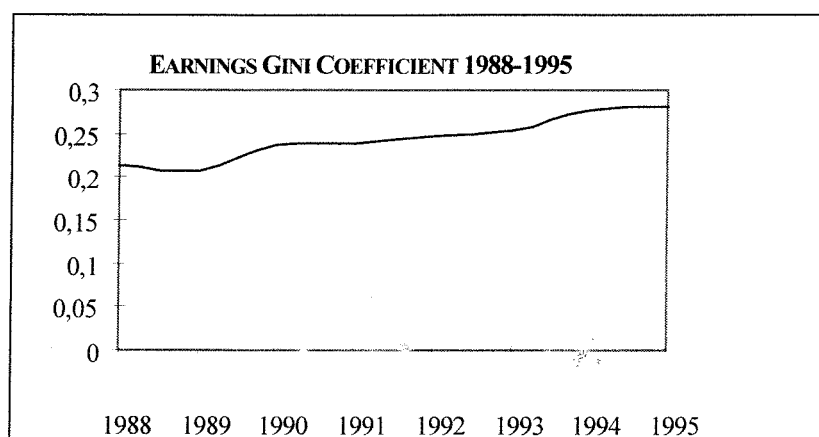
In fact, the Gini coefficient diminished for two socio-economic groups: mixed households, whose Gini coefficient diminished from 35.6 in 1989 to 28.6 in 1992, and farmers' households whose index passed from 24.9 in 1989 to 21.5 in 1992. On the contrary, for workers' households the index rose from 23.9 in 1989 to 25.95 in 1992 and for the last category, pensioners' households, the index changed from 22.9 in 1989 to 24.9 in 1992.

We want to emphasize the following points: during the first four years of the transformation process there was a negligible change in the distribution of income; what really changed was the income distribution within every socio-economic group. Our estimates show that for the first three years of the transformation process the structure of income distribution remained the typical distribution of a socialist country and did not approach the distribution of a middle range capitalist economy. The first four years of the transformation process did not basically alter the mechanism of income distribution in Poland.

The distribution of earnings 1988-1995

Quite a different picture emerges if we consider the earnings distribution instead of the income distribution. The earnings distribution has a different coverage and is available up to 1995². Obviously we use the same indexes and our estimates can be directly linked to the ones of Atkinson and Micklewright.

GRAPH 1



The Gini coefficient for earnings goes from 20.7 in 1989 to 28.2 in 1995 (graph1). We can observe two substantial jumps in the value of the coefficient: the first one in 1990 at the very beginning of the transformation process, and the second one in 1994 when the economic recovery was under way and the reform process was proceeding under the new government elected in September 1992. This substantial change in the earnings distribution is confirmed by the other indexes (table 3).

	1988	1989	1990	1991	1992	1993	1994	1995
RHI	14,8	14,4	16,7	16,8	17,4	17,9	19,7	20,1
Gini	0,212	0,207	0,237	0,239	0,246	0,253	0,277	0,282
Coef. di Var	0,384	0,380	0,436	0,447	0,464	0,475	0,534	0,545

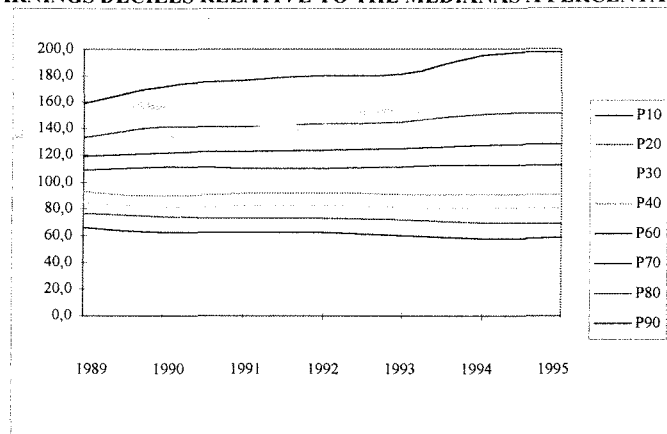
Source: *Rocznik Statystyczny, GUS, Warsaw; Author's calculations based on paretian interpolation*

² The pattern of the publications has not changed, enabling us to bring our analysis to the 1995. The main differences from the income coverage are the exclusion of the agricultural sector and the inclusion of the private sector firms from 1991.

If we take 1989 as the base year, we see that the Gini Coefficient goes from 20.7 to 28.2, with a jump of 7.5 percentage points, which is more than a third of the initial value. The same considerations apply to the RHI index, a jump of 39%, and to the coefficient of variation, a jump of 41%.

What clearly emerges is that the earnings distribution is becoming less egalitarian as time goes by, contradicting the previous findings on income distribution. If we take the same time period, 1989-1992, for both distributions, we see that the income Gini coefficient remains the same, while the second one goes from 20.7 to 24.6. The economic explanation for such a shift may be the one given by Rutkowsky (96) i.e. high skills with a high educational content mainly in the thriving private sector are better paid.

GRAPH 2
EARNINGS DECILES RELATIVE TO THE MEDIANAS A PERCENTAGE



This pattern is clearly shown by graph 2, where the shift of the earnings distribution in favour of the highest three deciles and against the lowest two deciles is easily detected.

This pattern is confirmed by the decile ratio (table 4) which goes from 2.43 in 1989 to 3.4 in 1995.

TABLE 4		DECILE RATIO, EARNINGS, 1989-1995				
1989	1990	1991	1992	1993	1994	1995
2,43	2,76	2,86	2,92	3,03	3,38	3,4

Source: Rocznik Statystyczny, GUS, Warsaw; Author's calculations based on paretian interpolation

The picture which emerges from these estimates is a process of an economic system that is quite quickly becoming less egalitarian, approaching the values in the earnings distribution typical of a capitalistic economy. Atkinson and Micklewright calculated a value of a Gini coefficient of 28.3 and a decile ratio of 3.39 for United Kingdom in 1989. According to these values Poland 1995 is very similar to United Kingdom 1989.

Some interesting features of the earnings distribution in Poland.

We consider the earnings distribution of white collar workers and blue collar workers and the changing relationship between the two distributions .

TABLE 5 INEQUALITY STATISTICS FOR WHITE AND BLUE COLLAR WORKERS

	Gini	P ₁₀	P ₂₅	P ₇₅	P ₉₀	P ₉₅	P ₉₀ /P ₁₀
1995							
Blue collars	0,263	58,02	72,26	139,67	192,43	237,92	3,316
white collars	0,293	62,44	77,57	139,55	208,61	274,87	3,341
1989							
Blue collars	0,210	63,28	79,14	126,53	160,33	189,15	2,53
white collars	0,191	68,19	82,4	124,55	156,91	184,69	2,3

Source: Rocnik Statystyczny, GUS, Warsaw; Author's calculations based on paretian interpolation

From table 5 we see that the Gini coefficient for blue collar workers goes from 21 in 1989 to 26.4 in 1995, while the corresponding value for white collars workers goes from 19.1 in 1989 to 29.3 in 1995. This is consistent with our previous findings. The interesting feature is that the earnings distribution for white collars workers was more egalitarian in 1989 than the blue collars one, reflecting a socialist wage structure. In only six years this structure is completely reversed in favour of white collars workers.

TABLE 6 RATIO OF THE CORRESPONDING DECILES OF THE TWO CATEGORIES

(Decile_i, white collars / Decile_i, blue collars)

Decile	first	second	third	fourth	fifth	sixth	seventh	eighth	ninth
1995	128,05	126,38	124,17	121,19	118,99	118,4	118,59	120,4	128,99
1994	126,69	125,93	123,17	120,98	119,35	118,69	118,41	119,48	126,44
1989	109,14	105,92	103,97	102,41	101,28	100,44	99,816	99,41	99,119
1988	107,06	103,65	100,97	99,439	98,679	98,395	98,165	97,755	96,598

Source: Rocnik Statystyczny, GUS, Warsaw; Author's calculations based on paretian interpolation

From table 6 we can see that from 1991 onwards for every decile of the two distributions white collar workers earn more than the corresponding blue collar workers; the magnitude of this wage differential varies from 10.3% to 17.6% in 1991, rising to a value between 19% to 29% in 1995. In 1988 and 1989 the ratio for the highest deciles was still in favour of blue collar workers, as can be seen from the shaded area of the table. This change in the ratio testifies to a radical transformation of the wage structure of the Polish economy during the 90s.

A further interesting feature of the changing distribution in Poland is the changing gender distribution. The female Gini coefficient in 1985 was 17.72, which was the lowest for all eastern countries, while in 1995 it was 24.5, with an increase of 6.77 percentage points. The male Gini coefficient for earnings was 23.82 in 1985, rising to 29.39 in 1995, with an increase of 5.57 percentage points (see table 7).

TABLE 7	SUMMARY STATISTICS ON GENDER DISTRIBUTION					
	1985	1991	1992	1993	1994	1995
Female Gini coefficient	0,177267	0,205214	0,221246	0,22901	0,24432	0,2449
Male Gini coefficient	0,238213	0,24613	0,251773	0,257637	0,289029	0,29395
Ratio between the two coefficient	1,343809	1,199381	1,137979	1,125008	1,182991	1,20023

Source: Rocznik Statystyczny, GUS, Warsaw; Author's calculations based on paretian interpolation

What is clear is that the female distribution of earnings is widening, more than the male one. This phenomenon is witnessed by the ratio between the two Gini coefficients which was 1.34 in 1985 and 1.2 in 1995. An interesting feature is the relationship between male and female earnings: if we take the two earnings distributions and calculate the ratio of the same decile ($P_{i,female} / P_{i,male}$) of the two distributions, the result is a narrowing of the gap between male and female earnings (table 8).

TABLE 8 **RATIO BETWEEN FEMALE AND MALE DECILES**

decile	1	2	3	4	5	6	7	8	9
1985	76,875	75,524	74,897	74,412	73,712	72,619	71,126	69,012	65,078
1991	83,135	81,516	81,293	80,896	78,898	78,885	77,109	74,586	71,655
1992	87,282	85,161	84,424	83,842	83,012	81,539	79,319	81,032	73,571
1993	86,741	83,09	81,642	80,914	80,222	79,149	77,488	75,167	72,99
1994	90,941	85,674	83,942	82,581	81,262	79,561	76,754	73,317	69,253
1995	91,7	86,1	83,4	81,8	80,1	77,8	75,2	72,2	69,3

Source: Rocnik Statystyczny, GUS, Warsaw; Author's calculations based on paretian interpolation

This phenomenon is stronger for the low deciles and relatively weaker for the highest deciles (graph 3). It seems that during the transformation the female earning capacity is closer to the male one, but if we take into consideration the female participation rate and the female unemployment rate (table 9), the picture is less clearcut .

GRAPH 3
RATIO BETWEEN FEMALE AND MALE DECILE

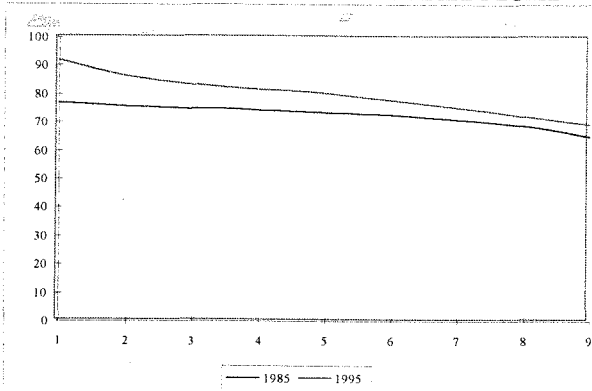


TABLE 9

Year	PARTICIPATION RATE			UNEMPLOYMENT RATE		
	total	Male	Female	total	male	female
1988	65.3	74.3	57	/	/	/
1990	/	/	/	6,3	/	/
1991	/	/	/	11,8	/	/
1992	61.7	70	54.2	13,7	12,37	15,17
1993	61.2	69.6	53.6	14,9	13,57	16,49
1994	59.2	67	52.2	13,87	12,33	15,66
1995	57.2	66.5	51.1	13,1	12,1	14,4

Source: Biuliyen Statystyczny, and Rocnik Statystyczny, GUS, Warsaw, 1995.

Generalized Lorenz curves for earnings and income distribution

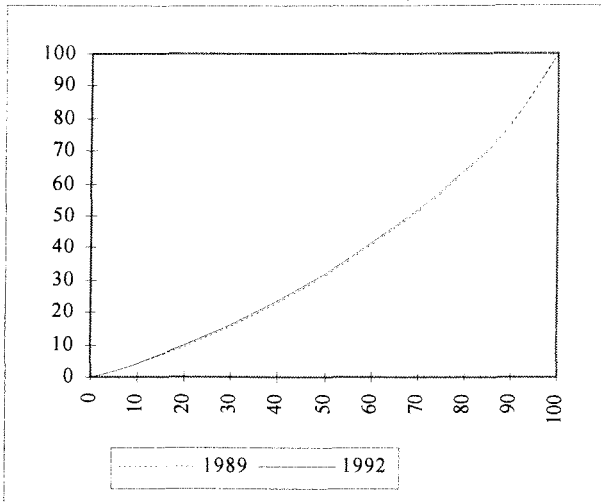
In order to investigate if the distribution of income and earnings during the transformation process is welfare enhancing, we computed two generalized Lorenz curves (Shorrocks 83 , Kakwani 84 , Thistle 89) for the income and earnings distribution for the same time period considered above. The Lorenz curve is the graph of cumulative income or earnings shares, where individuals are ranked in ascending order. For a finite population N indexed by their income rank so that $y_1 \leq y_2 \leq \dots \leq y_n$ the Lorenz curve corresponds to the points $(i/N, \sum_{n=1}^i y_n / Y)$, so that $L_y(i/N) = \sum_{n=1}^i y_n / Y$ with $1 \leq i \leq N$ and where $Y = \sum_{n=1}^N y_n$.

But the Lorenz curve provides only a partial ranking of the distribution, its distributional judgment is independent of the size of the income or earnings. For this reason, in order to make comparisons of distributions of various years and therefore with different income and earning mean, we use the generalized Lorenz curve. Shorrocks and Kakwani define the generalized Lorenz curve as the Lorenz curve scaled up by the mean of the distribution: $GL_y(i/N) = \mu L_y(i/N)$ with $1 \leq i \leq N$ so that $GL_y(i/N) = \sum_{n=1}^i y_n / N$.

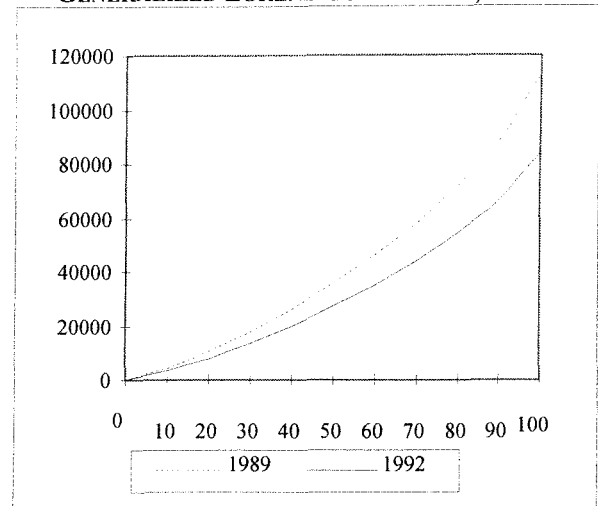
The generalized Lorenz curves are usually graphs which enable compare the income or earnings distribution of different populations at the same period to be compared; in our case the comparison is on the same population but at different time periods. For this reason, the income or earning mean by which a Lorenz curve is scaled has been deflated with two 1989 and 1992 deflators, that we use as benchmarks for the comparisons.

INCOME

GRAPH 4
LORENZ CURVES 1989, 1992



GRAPH 5
GENERALIZED LORENZ CURVES 1989, 1992

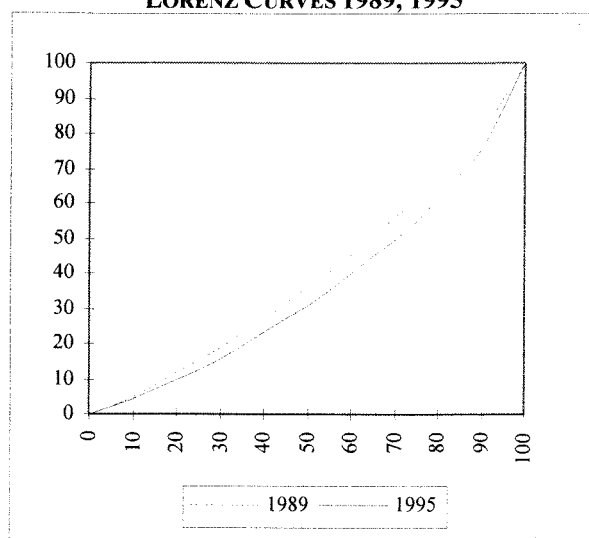


From graphs 4 and 5, where we have tabulated four Lorenz curves - two normal Lorenz curves for the years 1989-1992 and two generalized Lorenz curves for the same years - we immediately see that the two normal Lorenz curves for 1989-1992 almost overlap (graph 4), while the generalized one for 1992 lies below the 1989 one (graph 5). This means that the 1989 distribution of income was better in welfare terms than the 1992 one, or that the 1989 generalized Lorenz curve dominates the 1992 one.

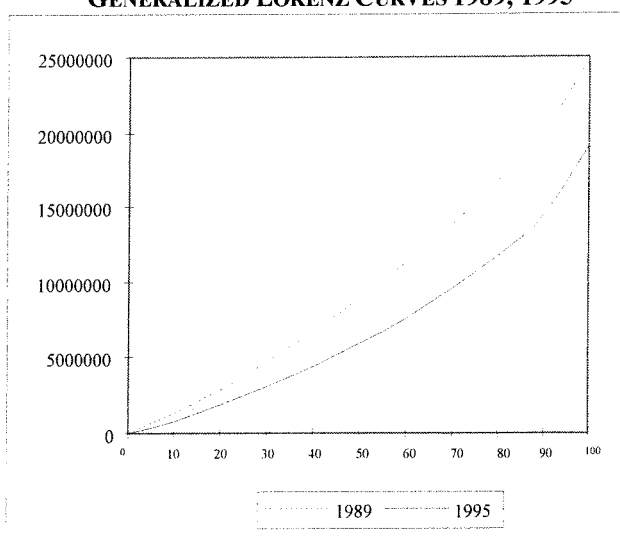
If we plot two normal Lorenz curves for the earnings distribution 1989-1995 and two generalized Lorenz curves, we immediately see that the 1995 normal earnings distribution is lower than the 1989 one (graph 6), but if we consider the generalized Lorenz curve for 1995, the 1989 distribution of earnings dominates the 1995 one (graph 7).

EARNINGS

GRAPH 6
LORENZ CURVES 1989, 1995



GRAPH 7
GENERALIZED LORENZ CURVES 1989, 1995

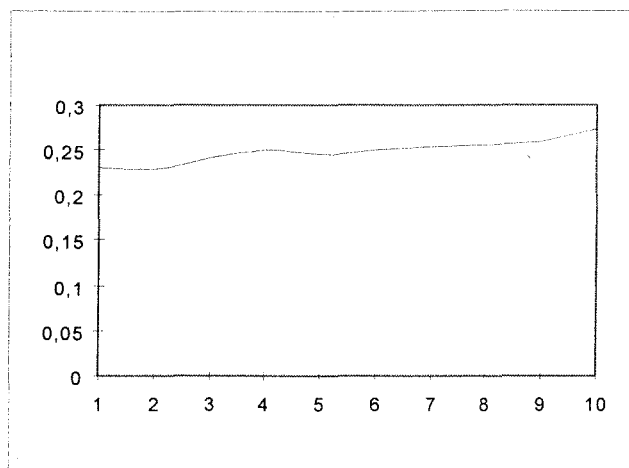


In order to assess which deciles of the population have gained more or lost less during the transformation process, we also computed the ratio for every decile of the two generalized Lorenz curves in order to obtain the loss or gain of every decile in percentage terms. The ratio is $\frac{\mu_{1992}^{def} S_i}{\mu_{1989} S_i}$ where S_i is the income share of the i -decile group and the 1992 mean is deflated to the year 1989³. Obviously, in the case of the earnings the ratio is

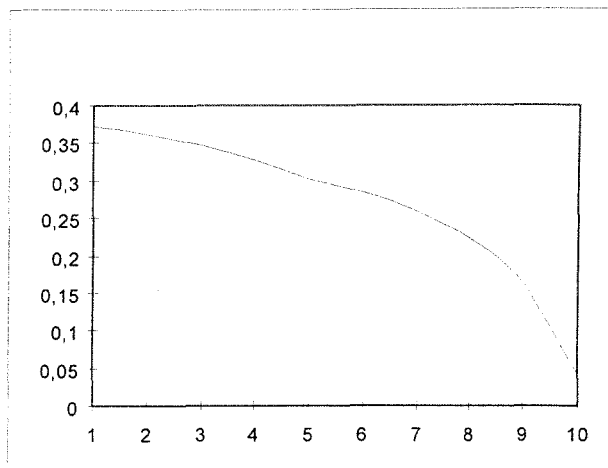
$$\frac{\mu_{1995}^{def} S_i}{\mu_{1989} S_i}$$

³ In order to deflate the income and the earning mean we used the consumer prices index (annual average) from 1989 to 1995.

GRAPH 8
INCOME 1989, 1992



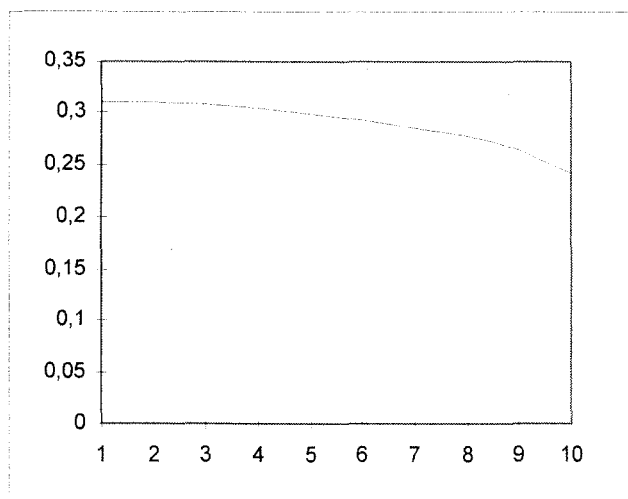
GRAPH 9
EARNINGS 1989, 1995



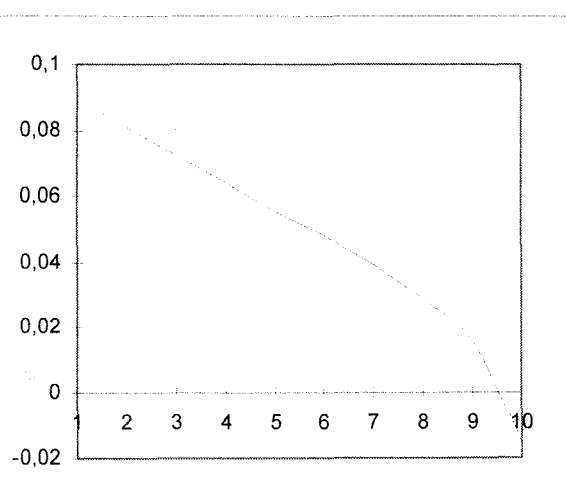
From graph 8 we see that the the income loss for every decile varies from 0.23 to 0.27 ,showing that the loss range is narrow. On the contrary the graph of the earnings loss shows quite a different picture (graph 9). The loss range goes from 37 % for the lowest deciles to 4% for the highest deciles . It is interesting to stress that the three highest deciles have the smallest losses, while from the third one onwards the loss becomes more than 25 %.

At first sight, there is a contradiction between the two graphs which could be explained by the different survey coverage and by the longer time span of the second graph, which encompasses a period of strong growth of the Polish economy. In order to check our conclusions, we considered two subperiods 1989-1992 and 1992-1995 of the earnings distribution (graph 10).

GRAPH 10
EARNINGS 1989 - 1992



EARNINGS 1992 - 1995



The earnings distribution for the first period is quite similar to the income distribution for the loss range (24 % to 31% versus 23 % to 27 %), even if this curve is downward sloping, while the other one is upward sloping in the last part. What is really important to emphasize is that the second graph witnesses a great differentiation in the earning losses among different deciles and a loss which decreases for each higher decile. The higher the decile, the lower the loss: in fact the highest decile has a gain of 1.5 % .

Conclusions

Our general conclusion on the evolution of the pattern of income and earnings distribution is that a substantial change has occurred from 1989 to 1995. The general pattern of both the distributions has very rapidly approached the highest values of Gini coefficient typical of capitalist countries.

This change has occurred very rapidly; in the period 1989-1993 the change was negligible, albeit more pronounced if we take into consideration the earnings distribution. The period of great change is from 1992 onwards during which we observe a real widening of the earnings distribution. There are gainers and losers in this process. White collar workers are clear winners in comparison to blue collar workers, while the female distribution of earnings is widening more than the male one, and the gap between male and female earnings is narrowing .

Using the generalized Lorenz curve, we found a worsening of the economic welfare for the period under consideration compared to the previous one. The really interesting point to emerge from this analysis is that in such a situation the highest deciles have lost less than the lowest deciles and as time goes by they are even gaining: a process that will probably gain momentum as economic growth continues .

APPENDIX

Sources and methodology

In this section we briefly describe the data source and the methodology we used in estimating the distribution of income and earnings. The main sources are: the statistical yearbook of Poland (Rocznik Statystyczny) for earnings and the Polish household budget survey (Budżety Gospodarstw Domowych) for income.

As far as income data are concerned, we based our analysis on the data collected by the Polish household budget survey, which enabled us to study the changing income distribution up to 1992. We could not pursue our study further because in 1992 there was a radical change in the sampling frame and the Polish statistical authorities ceased publishing income bands.

From the Budget Survey we used the information on four types of households :

- Households of workers.
- Mixed households.
- Households of farms.
- Households of pensioners.

Even though the published data refer to monthly net household income, they represent an estimate of the annual incomes of the households divided by twelve. For a comprehensive description of all the sources of household income, we refer to the Polish publication

The data on earnings collected up to 1995 by the September inquiry on the labour market are published every year by the Statistical Yearbook. The earnings are defined as gross monthly earnings of full time workers, and include base pay plus bonuses, overtime, premiums, compensation for hazardous work conditions, additional payments related to job tenure or holding of managerial position and profit shares. The data on earnings are comprehensive of the private sector firms with more than six employees.

We are well aware of the statistical differences caused by the change of economic systems, and for a detailed description of all the difficulties and shortcomings of the comparison between the two periods, we refer to Rutkowski (96) and Atkinson and Micklewright's book.

As we started our inquiry from the results obtained by Atkinson and Micklewright, we chose the same interpolation frame.

This approach starts from the top two intervals, that are assumed to be Paretian in form, and, working successively down from the top intervals, arrives at the lowest interval assuming that also the density in each interval is Paretian in form⁴.

In order to compute the interpolated values we have used a personal software in MATLAB environment that solves the exponential equations through the Newton-Raphson method. Testing our program on data series already studied by Atkinson and Micklewright, we achieved the same results, thus checking the correctness of our method.

⁴ For a more detailed description see Atkinson and Micklewright (1992) or Cowell (1996).

REFERENCES

- ATKINSON A.B., MICKLEWRIGHT J., *Economic transformation in Eastern Europe and the distribution of income*, Cambridge University Press, 1992, Cambridge.
- BERGSON A., "Income Inequality under Soviet Socialism", *Journal of Economic Literature*, Number 2, 1984.
- CORNELIUS P. K. and WEDER B. S., "Economic Transformation and Income Distribution: Some Evidence from the Baltic Countries", *IMF Staff Papers*, Number 43, 1996.
- COWELL F., "*Measuring inequality*", LSE Handbook in Economics, Prentice Hall 1995, London.
- DOYLE C., "The distributional consequence during the early stages of Russia's transition", *Review of Income and Wealth*, Number 4, series 42, 1996.
- FLAKIERSKI H., *Economic Reform and Income Distribution*, M.E. Sharpe, 1986, Armonk.
- FLAKIERSKI H., "Economic reform and Income Distribution in Poland: the Negative Evidence", *Cambridge Journal of Economics*, Number 5, 1981.
- FLAKIERSKI H., "Social Policies in the 1980s in Poland", in *A discussion of New Approaches, in Economic Reform and Welfare Systems in the USSR, Poland and Hungary* edited by Adam J., Macmillan, 1991, London.
- FOSTER J. E. and SHORROCKS A. F., "Poverty orderings and welfare dominance", *Social Choice and welfare*, Number 5, 1988.
- KAKWANI N., "Welfare ranking of income distributions", in *Advances in econometrics* edited by Basmann R.L. and Rhodes J., Number 3, 1984.
- KENDE P. STEMISKA Z., *Equality and inequality in Eastern Europe*, Berg, 1987, New York.

- KORDOS J., KUBIECZEK A., "*Methodological Problems in the Household Budget Survey in Poland*", GUS, 1990, Warsaw.
- KORDOS J., "*Some Aspects of Living Conditions of Household of Retired Persons and Pensioners in Poland*", study presented at the 3rd Polish-British Seminar on Social Politics, 1990, Madralin.
- KORDOS J., "*Towards an integrated System of Household Surveys in Poland*, in *Bulletin of international Statistical Institute*", Vol 51 Book 1, 1985, Amsterdam
- KUDRYCKA I., RADZIUKIEWICZ M., "Income distribution in the period of transition", *Research Bulletin (RECESS)*, Number 1, 1992, Warsaw
- LYDALL H. F., "Some Problems in Making International Comparisons of Inequality", in *Income Inequality: Trends and International Comparisons*, edited by Moroney J.R., D.C. Heath, 1979, Lexington.
- LYDALL H. F., *The Structure of Earnings*, Oxford University Press, 1968, Oxford.
- MATLAB® CURRICULUM SERIES, "*The Student Edition of MATLAB, the Ultimate Computing Environment for Technical Education*", Prattice Hall, 1995, Englewood Cliffs.
- MICHAL J. M., "Size Distribution of Household Incomes and Earnings in Developed Socialist Countries", in *Personal Income Distribution*, edited by Krelle W. and Shorrocks A., North Holland, 1978, Amsterdam
- MILANOVIC B., "Income inequality and poverty during the transition: a survey of the evidence", *Moct-Most*, Number 1, 1996.
- MORRISSON C., "Distribution of Income and Rights in the West and in the East", in *Equality and Inequality in Eastern Europe*, edited by Kende P. and Staminska Z., Berg, 1985, New York.

- MORRISSON C., "Income Distribution in East European and Western Countries", *Journal of Comparative Economics*, Number 8, 1984.
- MYANT M., *Transforming Socialist Economies: the case of Poland and Czechoslovakia*, Edward Elgar, 1993, Brookfield (USA).
- OCDE, *Unemployment in transition countries: transient or persistent*, OECD, 1994, Paris.
- OLENSKY J., "Statistical Processes in Transition (Experiences of the Central Statistical Office of Poland)", study presented at the BLS/Eurostat conference on economic statistics for economies in transition, 1991, Washington DC.
- PHELPS BROWN H., *Egalitarianism and the generation of inequality*, Oxford University Press, 1988, Oxford.
- PRYOR F. L., *Property and industrial Organization in Communist and Capitalist Nations*, Indiana University Press, 1973, Bloomington.
- REDOR D., "Les Inégalités des Salaires à l'Est et à l'Ouest", *Economica*, 1988, Paris
- RUTKOWSKI J., "High skills pay off: the changing wage structure during economic transition in Poland", *Economics of Transition*, Number 4, 1996, Oxford.
- RUTKOWSKI J., "Low Wage Employment in Transitional Economies of Central and Eastern Europe", *Moct-Most*, Number 1, 1997.
- SAUNDERS P., "Capitalism, Socialism and Income Distribution", *Review of income and wealth*, Number 3, 1994.
- SHORROCKS A., "Ranking Income Distributions", *Economica*, Number 50, 1983.

- THISTLE P.D., "Ranking Distributions with generalized Lorenz curves", *Southern Economic Journal*, Number 56, 1989.
- UNIDO, "Poland: managing the transition to a market economy", *Industrial Development Series*, 1991, Wien.
- UNITED NATIONS, "*Economic Survey of Europe in 1996-1997*", Geneve, 1997.
- VEC'ERNÍK J., "Changing earnings distribution in the Czech republic: survey evidence from 1988-1994", *Economics of Transition*, vol 3, 1995.
- Wagner G. G., Topinska I., Muller K., Frick J., "Income Inequality and Poverty Dynamics in Poland and East-Germany Before and Under Transition", Notburga Ott and Gert G. Wagner (Eds) *Income Inequality and Poverty in Eastern and Western Europe*, Physica-Verlag, 1997, Heidelberg.
- WILES P. J., "Income distribution under Communism and Capitalism", *Soviet Studies*, vol. 22, 1971.
- WILES P. J., "Our Shaky Data Base", *Personal Income Distribution*, edited by Krelle W. and Shorrocks A.F., North Holland, 1978, Amsterdam.

STATISTICAL SOURCES

- GŁÓWNY URZĄD STATYSTYCZNY, "*Budżety Gospodarstw Domowych*", years: 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993 and 1994, Warsaw.
- GŁÓWNY URZĄD STATYSTYCZNY, "*Buletyn Statystyczny*", Novembre (n°11) 1995, November (n°11) 1996 Warsaw.
- GŁÓWNY URZĄD STATYSTYCZNY, "*Gospodarstwa Domowe Wybrane Elementy Warunków Życia Ludności w I Kwartale 1995 R*", 1995, Warsaw
- GŁÓWNY URZĄD STATYSTYCZNY, "*Informacja statystyczna o sytuacji społeczno-gospodarczej kraju*", 1990, Warsaw.
- GŁÓWNY URZĄD STATYSTYCZNY, "*Polityka płac w Polsce w latach 1981-1985*", 1990, Warsaw.
- GŁÓWNY URZĄD STATYSTYCZNY, "*Praca i Zaberpieczone Społeczne*", 1987 n°9, 1989 n°3, Warsaw.
- GŁÓWNY URZĄD STATYSTYCZNY, "*Rocznik Statystyczny*", years: 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995 and 1996 Warsaw.
- GŁÓWNY URZĄD STATYSTYCZNY, "*Warunki życia ludności*", years: 1991, 1992 and 1993, Warsaw.
- GŁÓWNY URZĄD STATYSTYCZNY, "*Warunki życia ludności w latach 1986-1990*", 1990, Warsaw.

1. Maria Cristina Marcuzzo [1985] "Yoan Violet Robinson (1903-1983)", pp. 134
2. Sergio Lugaesi [1986] "Le imposte nelle teorie del sovrappiù", pp. 26
3. Massimo D'Angelillo e Leonardo Paggi [1986] "PCI e socialdemocrazie europee. Quale riformismo?", pp. 158
4. Gian Paolo Caselli e Gabriele Pastrello [1986] "Un suggerimento hobsoniano su terziario ed occupazione: il caso degli Stati Uniti 1960/1983", pp. 52
5. Paolo Bosi e Paolo Silvestri [1986] "La distribuzione per aree disciplinari dei fondi destinati ai Dipartimenti, Istituti e Centri dell'Università di Modena: una proposta di riforma", pp. 25
6. Marco Lippi [1986] "Aggregations and Dynamic in One-Equation Econometric Models", pp. 64
7. Paolo Silvestri [1986] "Le tasse scolastiche e universitarie nella Legge Finanziaria 1986", pp. 41
8. Mario Forni [1986] "Storie familiari e storie di proprietà. Itinerari sociali nell'agricoltura italiana del dopoguerra", pp. 165
9. Sergio Paba [1986] "Gruppi strategici e concentrazione nell'industria europea degli elettrodomestici bianchi", pp. 56
10. Nerio Naldi [1986] "L'efficienza marginale del capitale nel breve periodo", pp. 54
11. Fernando Vianello [1986] "Labour Theory of Value", pp. 31
12. Piero Ganugi [1986] "Risparmio forzato e politica monetaria negli economisti italiani tra le due guerre", pp. 40
13. Maria Cristina Marcuzzo e Annalisa Rosselli [1986] "The Theory of the Gold Standard and Ricardo's Standard Commodity", pp. 30
14. Giovanni Solinas [1986] "Mercati del lavoro locali e carriere di lavoro giovanili", pp. 66
15. Giovanni Bonifati [1986] "Saggio dell'interesse e domanda effettiva. Osservazioni sul cap. 17 della General Theory", pp. 42
16. Marina Murat [1986] "Betwin old and new classical macroeconomics: notes on Leijonhufvud's notion of full information equilibrium", pp. 20
17. Sebastiano Brusco e Giovanni Solinas [1986] "Mobilità occupazionale e disoccupazione in Emilia Romagna", pp. 48
18. Mario Forni [1986] "Aggregazione ed esogeneità", pp. 13
19. Sergio Lugaesi [1987] "Redistribuzione del reddito, consumi e occupazione", pp. 17
20. Fiorenzo Sperotto [1987] "L'immagine neopopulista di mercato debole nel primo dibattito sovietico sulla pianificazione", pp. 34
21. M. Cecilia Guerra [1987] "Benefici tributari nel regime misto per i dividendi proposto dalla commissione Sarcinelli: una nota critica", pp. 9
22. Leonardo Paggi [1987] "Contemporary Europe and Modern America: Theories of Modernity in Comparative Perspective", pp. 38
23. Fernando Vianello [1987] "A Critique of Professor Goodwin's 'Critique of Sraffa'", pp. 12
24. Fernando Vianello [1987] "Effective Demand and the Rate of Profits. Some Thoughts on Marx, Kalecki and Sraffa", pp. 41
25. Anna Maria Sala [1987] "Banche e territorio. Approccio ad un tema geografico-economico", pp. 40
26. Enzo Mingione e Giovanni Mottura [1987] "Fattori di trasformazione e nuovi profili sociali nell'agricoltura italiana: qualche elemento di discussione", pp. 36
27. Giovanna Procacci [1988] "The State and Social Control in Italy During the First World War", pp. 18
28. Massimo Matteuzzi e Annamaria Simonazzi [1988] "Il debito pubblico", pp. 62
29. Maria Cristina Marcuzzo (a cura di) [1988] "Richard F. Kahn. A discipline of Keynes", pp. 118
30. Paolo Bosi [1988] "MICROMOD. Un modello dell'economia italiana per la didattica della politica fiscale", pp. 34
31. Paolo Bosi [1988] "Indicatori della politica fiscale. Una rassegna e un confronto con l'aiuto di MICROMOD", pp. 25
32. Giovanna Procacci [1988] "Protesta popolare e agitazioni operaie in Italia 1915-1918", pp. 45
33. Margherita Russo [1988] "Distretto Industriale e servizi. Uno studio dei trasporti nella produzione e nella vendita delle piastrelle", pp. 157
34. Margherita Russo [1988] "The effect of technical change on skill requirements: an empirical analysis", pp. 28
35. Carlo Grillenzoni [1988] "Identification, estimations of multivariate transfer functions", pp. 33
36. Nerio Naldi [1988] "'Keynes' concept of capital", pp. 40
37. Andrea Ginzburg [1988] "locomotiva Italia?", pp. 30
38. Giovanni Mottura [1988] "La 'persistenza' secolare. Appunti su agricoltura contadina ed agricoltura familiare nelle società industriali", pp. 40
39. Giovanni Mottura [1988] "L'anticamera dell'esodo. I contadini italiani della 'restaurazione contrattuale' fascista alla riforma fondiaria", pp. 40
40. Leonardo Paggi [1988] "Americanismo e riformismo. La socialdemocrazia europea nell'economia mondiale aperta", pp. 120
41. Annamaria Simonazzi [1988] "Fenomeni di isteresi nella spiegazione degli alti tassi di interesse reale", pp. 44
42. Antonietta Bassetti [1989] "Analisi dell'andamento e della casualità della borsa valori", pp. 12
43. Giovanna Procacci [1989] "State coercion and worker solidarity in Italy (1915-1918): the moral and political content of social unrest", pp. 41
44. Carlo Alberto Magni [1989] "Reputazione e credibilità di una minaccia in un gioco bargaining", pp. 56
45. Giovanni Mottura [1989] "Agricoltura familiare e sistema agroalimentare in Italia", pp. 84
46. Mario Forni [1989] "Trend, Cycle and 'Fortuitous cancellation': a Note on a Paper by Nelson and Plosser", pp. 4
47. Paolo Bosi, Roberto Golinelli, Anna Stagni [1989] "Le origini del debito pubblico e il costo della stabilizzazione", pp. 26
48. Roberto Golinelli [1989] "Note sulla struttura e sull'impiego dei modelli macroeconomici", pp. 21
49. Marco Lippi [1989] "A Short Note on Cointegration and Aggregation", pp. 11
50. Gian Paolo Caselli e Gabriele Pastrello [1989] "The Linkage between Tertiary and Industrial Sector in the Italian Economy: 1951-1988. From an External Dependence to an International One", pp. 40
51. Gabriele Pastrello [1989] "Francois quesnay: dal Tableau Zig-zag al Tableau Formule: una ricostruzione", pp. 48
52. Paolo Silvestri [1989] "Il bilancio dello stato", pp. 34
53. Tim Mason [1990] "Tre seminari di storia sociale contemporanea", pp. 26
54. Michele Lalla [1990] "The Aggregate Escape Rate Analysed through the Queueing Model", pp. 23
55. Paolo Silvestri [1990] "Sull'autonomia finanziaria dell'università", pp. 11
56. Paola Bertolini, Enrico Giovannetti [1990] "Uno studio di 'filiera' nell'agroindustria. Il caso del Parmigiano Reggiano", pp. 164

57. Paolo Bosi, Roberto Golinelli, Anna Stagni [1990] "Effetti macroeconomici, settoriali e distributivi dell'armonizzazione dell'IVA", pp. 24
58. Michele Lalla [1990] "Modelling Employment Spells from Emilia Labour Force Data", pp. 18
59. Andrea Ginzburg [1990] "Politica Nazionale e commercio internazionale", pp. 22
60. Andrea Giommi [1990] "La probabilità individuale di risposta nel trattamento dei dati mancanti", pp. 13
61. Gian Paolo Caselli e Gabriele Pastrello [1990] "The service sector in planned economies. Past experiences and future prospectives", pp. 32
62. Giovanni Solinas [1990] "Competenze, grandi industrie e distretti industriali. Il caso Magneti Marelli", pp. 23
63. Andrea Ginzburg [1990] "Debito pubblico, teorie monetarie e tradizione civica nell'Inghilterra del Settecento", pp. 30
64. Mario Forni [1990] "Incertezza, informazione e mercati assicurativi: una rassegna", pp. 37
65. Mario Forni [1990] "Misspecification in Dynamic Models", pp. 19
66. Gian Paolo Caselli e Gabriele Pastrello [1990] "Service Sector Growth in CPE's: An Unsolved Dilemma", pp. 28
67. Paola Bertolini [1990] "La situazione agro-alimentare nei paesi ad economia avanzata", pp. 20
68. Paola Bertolini [1990] "Sistema agro-alimentare in Emilia Romagna ed occupazione", pp. 65
69. Enrico Giovannetti [1990] "Efficienza ed innovazione: il modello "fondi e flussi" applicato ad una filiera agro-industriale", pp. 38
70. Margherita Russo [1990] "Cambiamento tecnico e distretto industriale: una verifica empirica", pp. 115
71. Margherita Russo [1990] "Distretti industriali in teoria e in pratica: una raccolta di saggi", pp. 119
72. Paolo Silvestri [1990] "La Legge Finanziaria. Voce dell'enciclopedia Europea Garzanti", pp. 8
73. Rita Paltrinieri [1990] "La popolazione italiana: problemi di oggi e di domani", pp. 57
74. Enrico Giovannetti [1990] "Illusioni ottiche negli andamenti delle Grandezze distributive: la scala mobile e l'appiattimento delle retribuzioni in una ricerca", pp. 120
75. Enrico Giovannetti [1990] "Crisi e mercato del lavoro in un distretto industriale: il bacino delle ceramiche. Sez. I", pp. 150
76. Enrico Giovannetti [1990] "Crisi e mercato del lavoro in un distretto industriale: il bacino delle ceramiche. Sez. II", pp. 145
78. Antonietta Bassetti e Costanza Torricelli [1990] "Una riqualificazione dell'approccio bargaining alla selezioni di portafoglio", pp. 4
77. Antonietta Bassetti e Costanza Torricelli [1990] "Il portafoglio ottimo come soluzione di un gioco bargaining", pp. 15
79. Mario Forni [1990] "Una nota sull'errore di aggregazione", pp. 6
80. Francesca Bergamini [1991] "Alcune considerazioni sulle soluzioni di un gioco bargaining", pp. 21
81. Michele Grillo e Michele Polo [1991] "Political Exchange and the allocation of surplus: a Model of Two-party competition", pp. 34
82. Gian Paolo Caselli e Gabriele Pastrello [1991] "The 1990 Polish Recession: a Case of Truncated Multiplier Process", pp. 26
83. Gian Paolo Caselli e Gabriele Pastrello [1991] "Polish firms: Pricate Vices Pubblis Virtues", pp. 20
84. Sebastiano Brusco e Sergio Paba [1991] "Connessioni, competenze e capacità concorrenziale nell'industria della Sardegna", pp. 25
85. Claudio Grimaldi, Rony Hamaui, Nicola Rossi [1991] "Non Marketable assets and households' Portfolio Choice: a Case of Study of Italy", pp. 38
86. Giulio Righi, Massimo Baldini, Alessandra Brambilla [1991] "Le misure degli effetti redistributivi delle imposte indirette: confronto tra modelli alternativi", pp. 47
87. Roberto Fanfani, Luca Lanini [1991] "Innovazione e servizi nello sviluppo della meccanizzazione agricola in Italia", pp. 35
88. Antonella Caiumi e Roberto Golinelli [1992] "Stima e applicazioni di un sistema di domanda Almost Ideal per l'economia italiana", pp. 34
89. Maria Cristina Marcuzzo [1992] "La relazione salari-occupazione tra rigidità reali e rigidità nominali", pp. 30
90. Mario Biagioli [1992] "Employee financial participation in enterprise results in Italy", pp. 50
91. Mario Biagioli [1992] "Wage structure, relative prices and international competitiveness", pp. 50
92. Paolo Silvestri e Giovanni Solinas [1993] "Abbandoni, esiti e carriera scolastica. Uno studio sugli studenti iscritti alla Facoltà di Economia e Commercio dell'Università di Modena nell'anno accademico 1990/1991", pp. 30
93. Gian Paolo Caselli e Luca Martinelli [1993] "Italian GPN growth 1890-1992: a unit root or segmented trend representatin?", pp. 30
94. Angela Politi [1993] "La rivoluzione fraintesa. I partigiani emiliani tra liberazione e guerra fredda, 1945-1955", pp. 55
95. Alberto Rinaldi [1993] "Lo sviluppo dell'industria metalmeccanica in provincia di Modena: 1945-1990", pp. 70
96. Paolo Emilio Mistrulli [1993] "Debito pubblico, intermediari finanziari e tassi d'interesse: il caso italiano", pp. 30
97. Barbara Pistoresi [1993] "Modelling disaggregate and aggregate labour demand equations. Cointegration analysis of a labour demand function for the Main Sectors of the Italian Economy: 1950-1990", pp. 45
98. Giovanni Bonifati [1993] "Progresso tecnico e accumulazione di conoscenza nella teoria neoclassica della crescita endogena. Una analisi critica del modello di Romer", pp. 50
99. Marcello D'Amato e Barbara Pistoresi [1994] "The relationship(s) among Wages, Prices, Unemployment and Productivity in Italy", pp. 30
100. Mario Forni [1994] "Consumption Volatility and Income Persistence in the Permanent Income Model", pp. 30
101. Barbara Pistoresi [1994] "Using a VECM to characterise the relative importance of permanent and transitory components", pp. 28
102. Gian Paolo Caselli and Gabriele Pastrello [1994] "Polish recovery form the slump to an old dilemma", pp. 20
103. Sergio Paba [1994] "Imprese visibili, accesso al mercato e organizzazione della produzione", pp. 20
104. Giovanni Bonifati [1994] "Progresso tecnico, investimenti e capacità produttiva", pp. 30
105. Giuseppe Marotta [1994] "Credit view and trade credit: evidence from Italy", pp. 20
106. Margherita Russo [1994] "Unit of investigation for local economic development policies", pp. 25
107. Luigi Brighi [1995] "Monotonicity and the demand theory of the weak axioms", pp. 20
108. Mario Forni e Lucrezia Reichlin [1995] "Modelling the impact of technological change across sectors and over time in manufacturing", pp. 25
109. Marcello D'Amato and Barbara Pistoresi [1995] "Modelling wage growth dynamics in Italy: 1960-1990", pp. 38
110. Massimo Baldini [1995] "INDIMOD. Un modello di microsimulazione per lo studio delle imposte indirette", pp. 37

111. Paolo Bosi [1995] "Regionalismo fiscale e autonomia tributaria: l'emersione di un modello di consenso", pp. 38
112. Massimo Baldini [1995] "Aggregation Factors and Aggregation Bias in Consumer Demand", pp. 33
113. Costanza Torricelli [1995] "The information in the term structure of interest rates. Can stochastic models help in resolving the puzzle?" pp. 25
114. Margherita Russo [1995] "Industrial complex, pôle de développement, distretto industriale. Alcune questioni sulle unità di indagine nell'analisi dello sviluppo." pp. 45
115. Angelika Moryson [1995] "50 Jahre Deutschland. 1945 - 1995" pp. 21
116. Paolo Bosi [1995] "Un punto di vista macroeconomico sulle caratteristiche di lungo periodo del nuovo sistema pensionistico italiano." pp. 32
117. Gian Paolo Caselli e Salvatore Curatolo [1995] "Esistono relazioni stimabili fra dimensione ed efficienza delle istituzioni e crescita produttiva? Un esercizio nello spirito di D.C. North." pp. 11
118. Mario Forni e Marco Lippi [1995] "Permanent income, heterogeneity and the error correction mechanism." pp. 21
119. Barbara Pistoresi [1995] "Co-movements and convergence in international output. A Dynamic Principal Components Analysis" pp. 14
120. Mario Forni e Lucrezia Reichlin [1995] "Dynamic common factors in large cross-section" pp. 17
121. Giuseppe Marotta [1995] "Il credito commerciale in Italia: una nota su alcuni aspetti strutturali e sulle implicazioni di politica monetaria" pp. 20
122. Giovanni Bonifati [1995] "Progresso tecnico, concorrenza e decisioni di investimento: una analisi delle determinanti di lungo periodo degli investimenti" pp. 25
123. Giovanni Bonifati [1995] "Cambiamento tecnico e crescita endogena: una valutazione critica delle ipotesi del modello di Romer" pp. 21
124. Barbara Pistoresi e Marcello D'Amato [1995] "La riservatezza del banchiere centrale è un bene o un male? Effetti dell'informazione incompleta sul benessere in un modello di politica monetaria." pp. 32
125. Barbara Pistoresi [1995] "Radici unitarie e persistenza: l'analisi univariata delle fluttuazioni economiche." pp. 33
126. Barbara Pistoresi e Marcello D'Amato [1995] "Co-movements in European real outputs" pp. 20
127. Antonio Ribba [1996] "Ciclo economico, modello lineare-stocastico, forma dello spettro delle variabili macroeconomiche" pp. 31
128. Carlo Alberto Magni [1996] "Repeatable and a tantum real options a dynamic programming approach" pp. 23
129. Carlo Alberto Magni [1996] "Opzioni reali d'investimento e interazione competitiva: programmazione dinamica stocastica in optimal stopping" pp. 26
130. Carlo Alberto Magni [1996] "Vaghezza e logica fuzzy nella valutazione di un'opzione reale" pp. 20
131. Giuseppe Marotta [1996] "Does trade credit redistribution thwart monetary policy? Evidence from Italy" pp. 20
132. Mauro Dell'Amico e Marco Trubian [1996] "Almost-optimal solution of large weighted equicut problems" pp. 30
133. Carlo Alberto Magni [1996] "Un esempio di investimento industriale con interazione competitiva e avversione al rischio" pp. 20
134. Margherita Russo, Peter Börkey, Emilio Cubel, François Lévêque, Francisco Mas [1996] "Local sustainability and competitiveness: the case of the ceramic tile industry" pp. 66
135. Margherita Russo [1996] "Camionetto tecnico e relazioni tra imprese" pp. 190
136. David Avra Lane, Irene Poli, Michele Lalla, Alberto Roverato [1996] "Lezioni di probabilità e inferenza statistica" pp. 288
137. David Avra Lane, Irene Poli, Michele Lalla, Alberto Roverato [1996] "Lezioni di probabilità e inferenza statistica - Esercizi svolti -" pp. 302
138. Barbara Pistoresi [1996] "Is an Aggregate Error Correction Model Representative of Disaggregate Behaviours? An example" pp. 24
139. Luisa Malaguti e Costanza Torricelli [1996] "Monetary policy and the term structure of interest rates" , pp. 30
140. Mauro Dell'Amico, Martine Labbé, Francesco Maffioli [1996] "Exact solution of the SONET Ring Loading Problem", pp. 20
141. Mauro Dell'Amico, R.J.M. Vaessens [1996] "Flow and open shop scheduling on two machines with transportation times and machine-independent processing times in NP-hard, pp. 10
142. M. Dell'Amico, F. Maffioli, A. Sciomechen [1996] "A Lagrangean Heuristic for the Pirze Collecting Travelling Salesman Problem", pp. 14
143. Massimo Baldini [1996] "Inequality Decomposition by Income Source in Italy - 1987 - 1993", pp. 20
144. Graziella Bertocchi [1996] "Trade, Wages, and the Persistence of Underdevelopment" pp. 20
145. Graziella Bertocchi and Fabio Canova [1996] "Did Colonization matter for Growth? An Empirical Exploration into the Historical Causes of Africa's Underdevelopment" pp. 32
146. Paola Bertolini [1996] "La modernization de l'agriculture italienne et le cas de l'Emilie Romagne" pp. 20
147. Enrico Giovannetti [1996] "Organisation industrielle et développement local: le cas de l'agroindustrie in Emilie Romagne" pp. 18
148. Maria Elena Bontempi e Roberto Golinelli [1996] "Le determinanti del leverage delle imprese: una applicazione empirica ai settori industriali dell'economia italiana" pp. 31
149. Paola Bertolini [1996] "L'agriculture et la politique agricole italienne face aux recents scenarios", pp. 20
150. Enrico Giovannetti [1996] "Il grado di utilizzo della capacità produttiva come misura dei costi di transizione. Una rilettura di 'Nature of the Firm' di R. Coase", pp. 65
151. Enrico Giovannetti [1996] "Il I° ciclo del Diploma Universitario Economia e Amministrazione delle Imprese", pp. 25
152. Paola Bertolini, Enrico Giovannetti, Giulia Santacaterina [1996] "Il Settore del Verde Pubblico. Analisi della domanda e valutazione economica dei benefici", pp. 35
153. Giovanni Solinas [1996] "Sistemi produttivi del Centro-Nord e del Mezzogiorno. L'industria delle calzature", pp. 55
154. Tindara Addabbo [1996] "Married Women's Labour Supply in Italy in a Regional Perspective", pp. 85
155. Paolo Silvestri, Giuseppe Catalano, Cristina Bevilacqua [1996] "Le tasse universitarie e gli interventi per il diritto allo studio: la prima fase di applicazione di una nuova normativa" pp. 159
156. Sebastiano Brusco, Paolo Bertossi, Margherita Russo [1996] "L'industria dei rifiuti urbani in Italia", pp. 25
157. Paolo Silvestri, Giuseppe Catalano [1996] "Le risorse del sistema universitario italiano: finanziamento e governo" pp. 400
158. Carlo Alberto Magni [1996] "Un semplice modello di opzione di differimento e di vendita in ambito discreto", pp. 10
159. Tito Pietra, Paolo Siconolfi [1996] "Fully Revealing Equilibria in Sequential Economies with Asset Markets" pp. 17
160. Tito Pietra, Paolo Siconolfi [1996] "Extrinsic Uncertainty and the Informational Role of Prices" pp. 42
161. Paolo Bertella Farnetti [1996] "Il negro e il rosso. Un precedente non esplorato dell'integrazione afroamericana negli Stati Uniti" pp. 26
162. David Lane [1996] "Is what is good for each best for all? Learning from others in the information contagion model" pp. 18

163. Antonio Ribba [1996] "A note on the equivalence of long-run and short-run identifying restrictions in cointegrated systems" pp. 10
164. Antonio Ribba [1996] "Scomposizioni permanenti-transitorie in sistemi cointegrati con una applicazione a dati italiani" pp. 23
165. Mario Forni, Sergio Paba [1996] "Economic Growth, Social Cohesion and Crime" pp. 20
166. Mario Forni, Lucrezia Reichlin [1996] "Let's get real: a factor analytical approach to disaggregated business cycle dynamics" pp. 25
167. Marcello D'Amato e Barbara Pistoresi [1996] "So many Italies: Statistical Evidence on Regional Cohesion" pp. 31
168. Elena Bonfiglioli, Paolo Bosi, Stefano Toso [1996] "L'equità del contributo straordinario per l'Europa" pp. 20
169. Graziella Bertocchi, Michael Spagat [1996] "Il ruolo dei licei e delle scuole tecnico-professionali tra progresso tecnologico, conflitto sociale e sviluppo economico" pp. 37
170. Gianna Boero, Costanza Torricelli [1997] "The Expectations Hypothesis of the Term Structure of Interest Rates: Evidence for Germany" pp. 15
171. Mario Forni, Lucrezia Reichlin [1997] "National Policies and Local Economies: Europe and the US" pp. 22
172. Carlo Alberto Magni [1997] "La trappola del Roe e la tridimensionalità del Van in un approccio sistemico", pp. 16
173. Mauro Dell'Amico [1997] "A Linear Time Algorithm for Scheduling Outforests with Communication Delays on Two or Three Processor" pp 18
174. Paolo Bosi [1997] "Aumentare l'età pensionabile fa diminuire la spesa pensionistica? Ancora sulle caratteristiche di lungo periodo della riforma Dini" pp 13
175. Paolo Bosi e Massimo Matteuzzi [1997] "Nuovi strumenti per l'assistenza sociale" pp 31
176. Mauro Dell'Amico, Francesco Maffioli e Marco Trubian [1997] "New bounds for optimum traffic assignment in satellite communication" pp 21
177. Carlo Alberto Magni [1997] "Paradossi, inverosimiglianze e contraddizioni del Van: operazioni certe" pp 9
178. Barbara Pistoresi e Marcello D'Amato [1997] "Persistence of relative unemployment rates across italian regions" pp 25
179. Margherita Russo, Franco Cavedoni e Riccardo Pianesani [1997] "Le spese ambientali dei Comuni in provincia di Modena, 1993-1995" pp. 23
180. Gabriele Pastrello [1997] "Time and Equilibrium, Two Elusive Guests in the Keynes-Hawtrey-Robertson Debate in the Thirties" pp. 25
181. Luisa Malaguti e Costanza Torricelli [1997] "The Interaction Between Monetary Policy and the Expectation Hypothesis of the Term Structure of Interest rates in a N-Period Rational Expectation Model" pp. 27
182. Mauro Dell'Amico [1997] "On the Continuous Relaxation of Packing Problems - Technical Note" pp. 8
183. Stefano Bordoni [1997] "Prova di Idoneità di Informatica Dispensa Esercizi Excel 5" pp 49
184. Francesca Bergamini e Stefano Bordoni [1997] "Una verifica empirica di un nuovo metodo di selezione ottima di portafoglio pp 22